UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

REMEDIAL SITE ASSESSMENT DECISION - EPA REGION III

Site Name:	Blades Groundwater		
SEMS ID#:	DEN000304203		
DSN:	DE-392		
Alias Site Names:	N/A		
City:	Blades		
County:	Sussex		
State:	Delaware		
Watershed Priority Area:			
Refer to Report Dated:	June 2019		
Report Type:	Site Inspection		
Report developed by:	EPA Region III		
Site Decision Made by:	Connor O'Loughlin	**Date:**	5/31/2019

DECISION: G - Recommended for HRS Scoring

1. **Further Remedial Site Assessment under CERCLA (Superfund) is not required because:**
   - N - NFRAP No Further Remedial Action Planned
   - A - Addressed as part of an existing NPL site (site will be entered if this is selected)
   - D - Deferred to RCRA
   - B - Addressed as part of another non-NPL site
   - W - Referred to Removal, no further Remedial Assessment
   - DN - Deferred to NRC
   - SA - Recommended as a SF Alternative Site
   - OCA - Other Cleanup Activity: Fed Fac (FF) Private Party Lead (PP) State Lead (OS)

2. **Further Assessment Needed Under CERCLA:**
   - H - Higher Priority for further assessment
   - L - Lower priority for further assessment
   - G - Recommended for HRS Scoring
   - F - Referred to Removal, Needs further Remedial Assessment

DISCUSSION/RATIONALE:
The United States Environmental Protection Agency (EPA) in cooperation with Delaware's Department of Natural Resources and Environmental Control (DNREC) have concurred that further investigation and actions were required at the Procino (EPA ID No. DEN000306737), and Peninsula Plating (EPA ID No. DE0001167998) sites in Blades, DE ("the Sites").

As part of the site reassessment performed by EPA in 2017, EPA identified a photograph from EPA's 2010 Preliminary Assessment which displayed several drums of Fumetrol 140 in the Procino facility. Fumetrol 140 consists primarily of a perfluoroalkyl/polyfluoroalkyl substance (PFAS). On EPA's suggestion DNREC collected three groundwater samples from the public wells and identified PFAS compounds in the groundwater. EPA and DNREC concurred that because of this information a new Site Inspection was required. Contamination was previously documented during previous assessments emanating from the Procino and Peninsula Plating facilities. The facilities were identified Ex.9 Wells Ex.9 Wells. The three-shallow public drinking water wells were identified as being impacted by PFOS/PFOA (PFAS) above the Health Advisory Level (HAL) which is a contaminant of concern.

During the SI, EPA sampled 56 residential wells, existing and new groundwater monitoring locations, and the surface water and sediments of the Morgan Branch Creek. These sampling tasks were due to the potential for perflourinated compounds (PFAS) emanating from the Procino Plating and Peninsula Plating Sites. The two electroplating facilities Ex.9 Wells Ex.9 Wells and have the potential to be a source of PFAS and metals contamination in the public and residential wells. Additional industrial facilities located in the Town of Blades include Anchor Enterprises, a steel fabrication facility, and a concrete and cinder-block manufacturer; Delmarva Aggregate.

Site History: Procino Plating Incorporated:
The Procino Plating building was first constructed in 1937 and a second building was added in 1954. The parcel is a 1.6 acre plating facility and has been active and operating as a plating facility since the 1980's and operated as Procino Plating since 1996. The extent of plating operations has been reduced to hard chrome plating for griddle tops and minor aluminum etching. Liquid chromium was stored in two large tanks inside the plant.

In 1996, Procino Plating installed a subsurface wastewater collection and treatment system to manage and treat the rinse water and the floor drains at the plant. Two smaller buildings were constructed between 1997 and 2002. Following business downturns and several NOV's, the plating process in the second building was dismantled in 2007, and the wastewater piping system and drains were sealed with concrete as part of the DNREC VCP remediation plan due to failed inspections. The chrome tanks were drained and removed from service in 2009. The business currently employs 10 people and has a smaller operation.

Site History: Peninsula Plating Incorporated:
The Peninsula Plating facility is now closed but the parcel consisted of approximately 5.8 acres. The site was in operation from the 1970's to 1995. There were six older warehouse/storage type buildings present on the property. Historically in the 1980's to 1990's the buildings were leased out to a variety of companies including the metal plating company, a vending company, a sign company, a trash hauling firm, a steel products company, and a bread distribution company. The property is currently vacant.

In 1995 EPA conducted a removal action on the abandoned Peninsula Plating facility to remove hazardous materials, drums, and tanks. The EPA action noted the presence of various chemicals used in the plating process including nickel sulfate, sulfuric acid, chromic acid, nickel chloride, and copper cyanide. A Site Inspection (SI) was completed in 1999 to investigate the possible existence of released hazardous

substances at the Peninsula Plating property. EPA collected environmental samples including surface soils, deep soils, and shallow groundwater. Based on the concentrations in the SI no further actions were taken.

Procino Plating – New Environmental Information

The 2010 PA report indicated Procino Plating used a mist suppressant Fumetrol 140 in the electroplating process. The compound contains 1% to 7% organic fluorosulfonate (PFOS) by weight. According to several inspections, the PA, RI and EPA's SI there have been several spills and releases from the facility the most recent being this year.

In November 2018 the Procino Plating facility reported their Chromic Acid tank was overfilled with water and overflowed into a secondary containment and into a soil crawlspace beneath the building. The tank contained chromium trioxide mixed with deionized water and a small amount of sulfuric acid as well as a catalyst (Atotech Heef 25 MS) and mist suppressant (Atotech Fumetrol 21). Fumetrol 21 is marketed as non-PFOS, and the Safety Data Sheet lists the "hazardous ingredients" as polyfluorosulfonic acid at 1.0 to 2.5 percent and diethylene glycol monobutyl ether at 0.1 to 1.0 percent. Approximately, 1 ¼ gallons of Fumetrol was added to the 500-gallon tank plating solution. The total amount of the solution lost is unknown. At the time of the notification to DNREC and EPA following the spill, Procino was in the process of removing the impacted soil and their contractor, Ten Bears Environmental collected post-excavation soil samples of the impacted soil in the crawlspace. Analytical results were to be submitted to DNREC for review and determination if any additional follow-up actions was required.

Peninsula Plating New Environmental Information

Peninsula Plating is an inactive plating facility that operated at its location in Blades from approximately 1992 to 1995. Peninsula Plating conducted brass, copper, and chrome plating operations. During the removal activities in 1995 EPA removed nickel sulfate, nickel chloride, sulfuric acid, chromic acid, hexavalent chromium, aka Cr(VI), chloride, copper cyanide, copper sulfate, zinc cyanide, and cadmium fluoroborate. It was noted in the On-Scene Coordinator (OSC) logbook for the Peninsula Plating facility that the chemical cadmium fluoroborate was present at the facility in containers. Fluoroborates are PFOS-containing compounds.

The facility had a wastewater discharge permit issued by Sussex County, which was revoked by DNREC on May 30, 1995. DNREC closed the discharge on August 3, 1995 by pouring concrete into the drain system in front of the building. Based on information in the SI, DNREC indicated a possible septic drain field was located in the center of the Blades Commercial Complex property, behind (immediately north) of the former Peninsula Plating facility. A drainage ditch was in the center of the property heading west towards the railroad tracks. Additionally, according to the Town of Blades Water and Maintenance Supervisor, the property on which Peninsula Plating is located was connected to the county sanitary sewer system in 2002. The Peninsula Plating facility was abandoned in 1995 leaving unattended tanks, vats, drum and other hazardous chemical onsite. Leaks, discharges, spills, and vandalism were documented during operations and closure of the facility.

Pathways and Exposure

Geology

The major hydrogeologic system at the Site is the Columbia Aquifer. It is underlain by the Nanticoke River Group deposits, which consist of the Turtle Branch and the Kent Isle Formations. The Nanticoke River Group is comprised of deposits related to a rise and high stand of sea level that consisted of beach, tidal flat, open estuary, marsh, swamp, and fluvial depositional environments. The Nanticoke River Group is approximately 25 feet thick and unconformably overlies the Beaverdam Formation. The Beaverdam Formation is a sandy, heterogeneous unit ranging from very coarse sand with pebbles and silty clay. The Beaverdam has a total thickness of approximately 105 feet and unconformably overlies the Manokin Formation, which is present from Seaford to the Maryland border. In the vicinity of Blades, the fine-grained

beds of the Manokin Formation are the base of the Columbia aquifer. The aquifer functions as both an unconfined and semiconfined aquifer. Saturated thickness ranges from 30 to 100 feet.

Surface Water and Sediment

The Nanticoke River is located approximately 2000 feet northwest of the Peninsula Plating property and 1,300 feet from the Procino Plating property. The Morgan Branch lies at a distance of 1,100 feet to the south of the most contaminated well on the Procino Plating facility. There is no direct surface water pathway between the sites and the river. Surface water coming from the site is expected to flow into the Nanticoke River though a combination of overland flowto the groundwater pathways and storm drains. Some surface water flows along the railroad right-of way located to the west of the site.

The Nanticoke River watershed drains land in northwestern Sussex County Delaware. The general flow of the two rivers in the SI flow in a southwesterly direction through Delaware. The baseflow of the river is derived from shallow groundwater flow. Due to the watershed's unique, threatened, or endangered resident flora and fauna, as well as the recreational opportunities it supports, the Nanticoke has been designated as a "Water of Exceptional Recreational or Ecological Significance.

Because Peninsula and Procino Plating are located within the town of Blades the land use close to the sites have been classified as developed land. However, there are wetlands adjacent to the Nanticoke River located west, southwest, and northwest of the site that are not developed. In December of 1994, DNREC conducted a study of sediment contamination in the Delaware portion of the Nanticoke River. This study showed that the contamination levels of sediment below Seaford were significantly higher than the contamination levels above Seaford, with metals proving to be the principal contaminants of concern. The site is located within an area of minimal flooding and are outside of the 500-year flood plain.

The SI concluded there is a direct surface water pathway from the site to the Nanticoke River based on metals and PFAS contamination in the sediments and surface water. There are various ecological targets in the 15 mile surface water pathway via shallow ground water flow. The surface water and sediment samples collected from the Morgan Branch and the Nanticoke River support a concern for ecological systems downstream from the sites.

Groundwater

The Town of Blades provides the potable water supply, utilizing three public wells for its supply. The water supply serves approximately 1,600 residents. Due to the identification of PFAS in the three public wells above the HAL the town of Blades installed a carbon treatment unit on the wells in February 2018. The town's wells **Ex.9 Wells** The wells are screened in the unconfined aquifer, approximately 66 to 96 feet below ground surface. Groundwater is the sole drinking water source for both public and domestic potable water in Blades and its surroundings. Public water is supplied to most residences within the town limits of Blades; however, some residences within town limits and the residences located beyond town limits to the southwest and to the northeast rely on domestic groundwater wells for potable water.

Based on analytical results, a PFAS groundwater plume has been documented at the Site. Public, domestic, and monitoring well samples document the presence of primarily PFOS in groundwater at concentrations three times above background levels and as high as 2,820 ppt on the Procino Plating facility. Additionally, the concentrations of PFOS in the public supply wells and the combined concentration of PFOS and PFOA in seven domestic wells exceed the EPA HAL of 70 ng/L. Approximately 1,600 persons are supplied drinking water by the Town of Blades public supply wells. Analytical results also show a continued documented metals contamination in groundwater, including hexavalent chromium.

Air and Soil

Test pit logs from the Procino and Peninsula Plating investigations previously show no evidence that the subject sites have received significant amounts of fill materials. The facilities are located approximately 1000 feet from the school and is surrounded by and within 200 feet of residential areas. From 1995 to the end of the investigation by DNREC in 1999, a total of ten test pits were excavated on the Peninsula Plating site. DNREC sampled both shallow and deep soil. Shallow and deep soil samples were collected from test pits to a maximum of 8' or until groundwater was reached. The test pits were then subsequently backfilled and leveled using the excavated materials. Metals concentrations exceeded EPA's standards including arsenic, iron, thallium, chromium, manganese, vanadium, and zinc.

From 2011 to 2016, EPA and DNREC evaluated the soil to groundwater pathway at the Procino Plating site. Results from the 2015 VCP RI indicated onsite total chromium concentration in the shallow soil samples ranged from 2.1 mg/kg; to 199 mg/kg. The soil sample results indicate there was a release historically. Iron was detected in three soil samples at concentrations exceeding its state residential standards. Volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides and polychlorinated biphenyls (PCBs) were not detected in the shallow or deep soil samples.

The site consists of a PFAS-contaminated groundwater plume. With the exception of the four soil samples (two shallow and two deep) collected from soil borings on the Procino Plating facility property, soil samples were not collected as part of this SI. The four soil samples collected contained detectable concentrations of PFOA, PFOS, and PFBS. The detected concentrations were significantly below RSLs for residential soil. A background sample was not collected.

Decision

Based upon the information obtained in the removal action documents, PA, SIs, Procino Plating's RI, and 2018 sample results from the public and residential well data. PFAS has been confirmed in the shallow groundwater under multiple commercial and residential properties, thus indicating there is a persistent threat to groundwater and drinking water. Due to these ongoing and consistent threats, further action and cleanup activities at the Site are needed to determine if any harmful impacts are ongoing and require continued EPA involvement to identify the comingled PFAS and existing metals contamination. Due to the ongoing issues with contamination EPA **recommends the site for hazard ranking scoring.**

Furthermore, DNREC has requested assistance in mitigating the potential threats posed by this Site, and has indicated that they concur with additional site assessment under the NPL guidelines. EPA recommends a high priority designation meaning a number of steps under the Federal Superfund program would be required in the future by DNREC and the Agency. In accordance with EPA's decision regarding the tracking of such sites, the referenced site will be updated in SEMS to indicate that the Site activity with a status of **Hazard Ranking Start Needed (HS)**. The site will remain open in the SEMS database as EPA completed the HRS package. EPA will notify the State of any progress to the site and the completion of the HRS package.